



Wind Energy Development

Wildlife Issues and Concerns

Wind and Prairie Task Force

February 27, 2004

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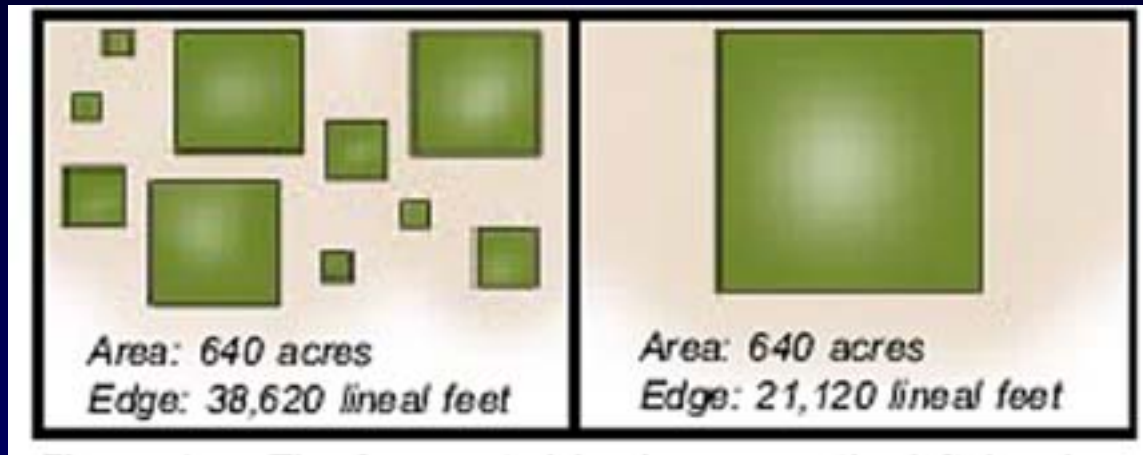
Wildlife Issues and Concerns

- Landscape and habitat fragmentation
- Habitat avoidance
- Bird and bat collision
- Predation



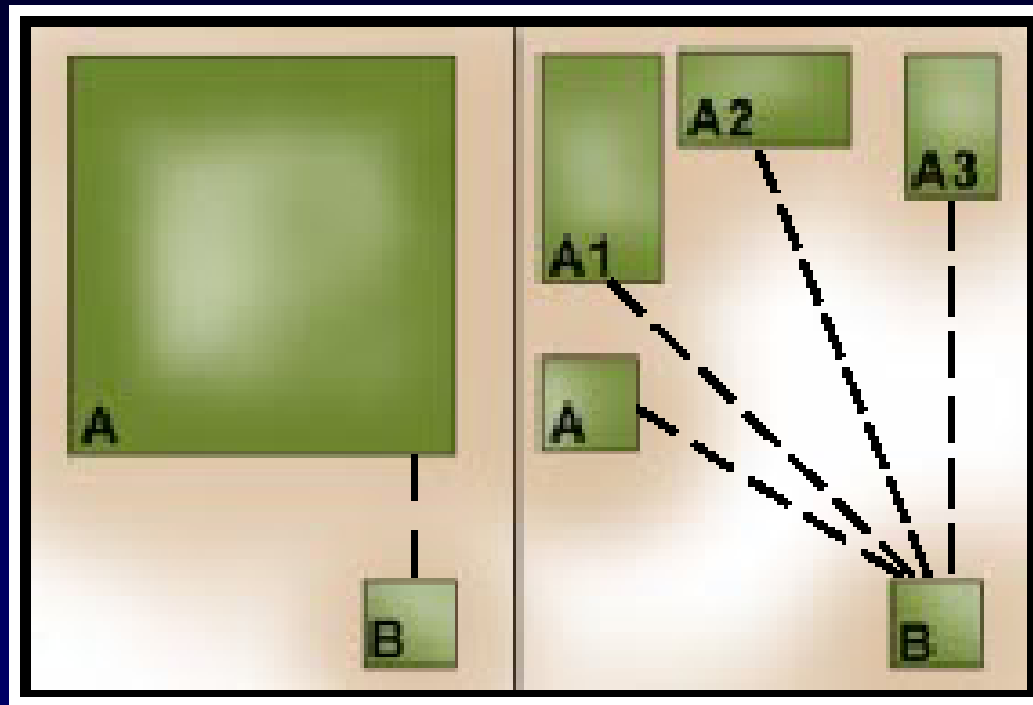
Landscape and Habitat Fragmentation

- Loss of habitat
- Reduced patch size
- Increased habitat edge
- Increased isolation of patches
- Modification of natural disturbance regime



Effects of Habitat Fragmentation:

- Loss of habitat
- Reduced patch size
- Increased amount of habitat edge



Effects of Habitat Fragmentation (cont.):

- Increased isolation of habitat patches reduces ability of wildlife to move between patches



Effects of Habitat Fragmentation (cont.):

- Modification of natural disturbance regime

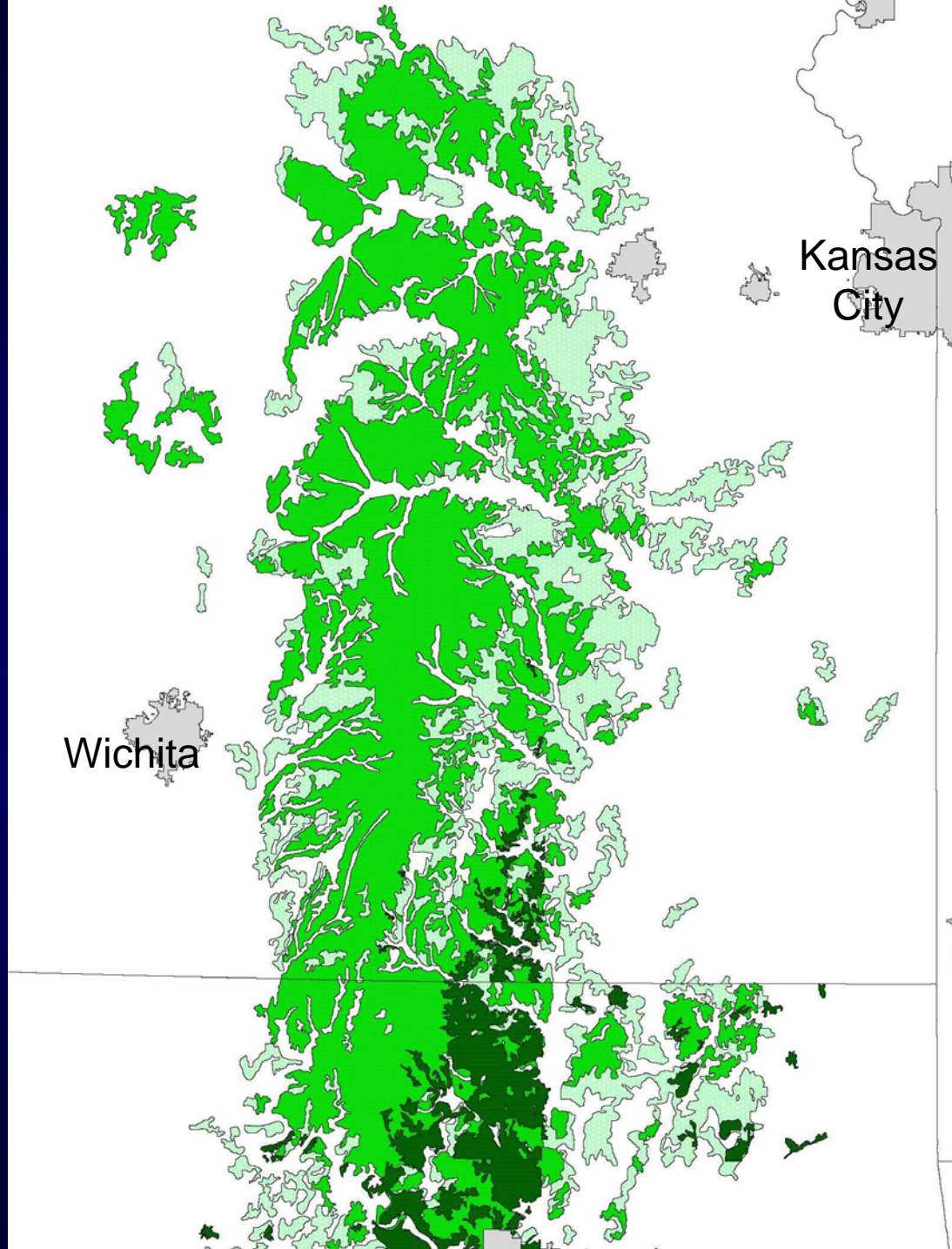


The Flint Hills: An Intact Natural Landscape





Untilled Landscapes of Eastern Kansas and Northeastern Oklahoma





Habitat Avoidance

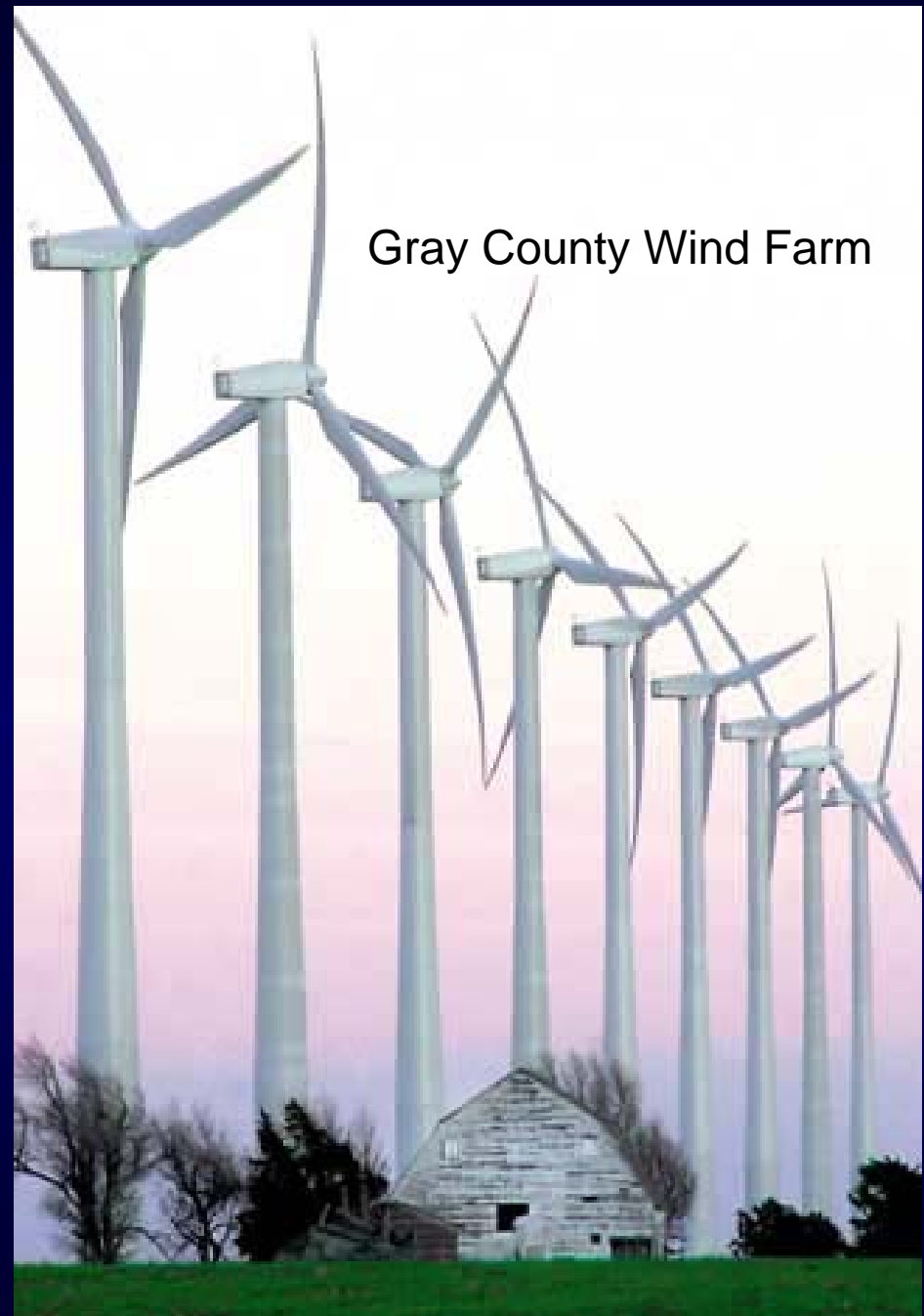
Results from:

- Visual obstructions
- Sound
- Roads and fences



Wind Farms

- Development size: 5-15,000 acres
- Turbine number: 50-200+
- Tower height: 350-420+ ft:
- Access roads
- Utility lines
- Service and maintenance





Bird and Bat Collision

Mortality:

- Turbine blades
- Transmission lines

Issues:

- Tower height
 - Higher towers may kill more birds -
285' tall vs. 350-420' tall
- Ridges
- Blade speed
 - Slower blade rotation kills fewer birds

Risk:

- Raptors
- Breeding birds



Significance of the Flint Hills: Birds

- Important breeding area for grassland birds
 - Core distribution of the Greater Prairie Chicken
 - Grassland birds are the most strongly declining group of birds in North America
- Migration corridor for selected species



Breeding Grassland Birds

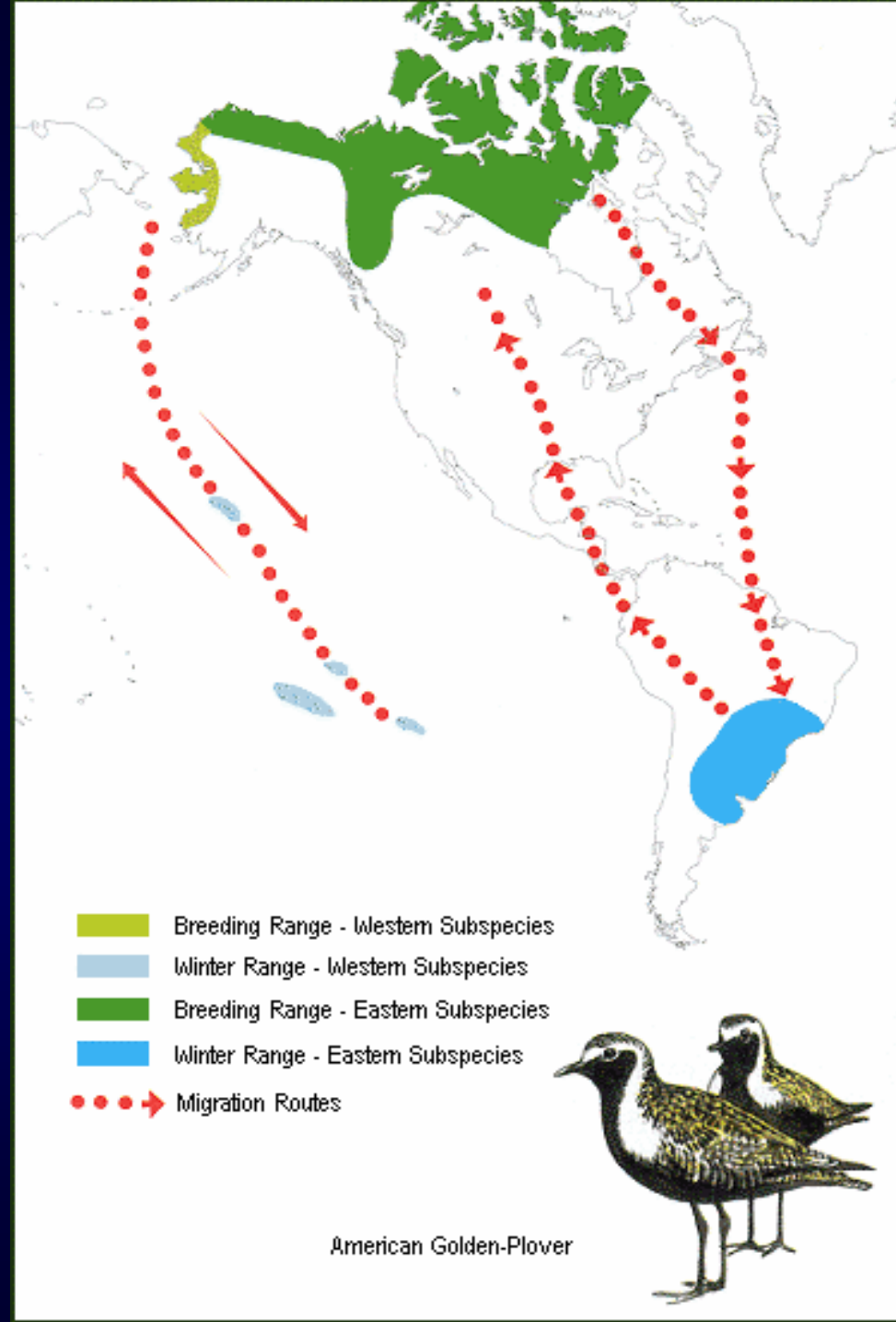
- Greater Prairie Chicken
- Upland Sandpiper
- Grasshopper Sparrow
- Henslow's Sparrow
- Dickcissel
- Eastern Meadowlark





Migration Corridor

- American Golden Plover
- Buff-breasted Sandpiper
- Upland Sandpiper
- Eskimo Curlew (extinct?)





Evidence for Concern

Grassland Birds in Minnesota

- Bird densities within about 100 m from each turbine were lower than those farther from turbines at wind farms with turbines and towers smaller than those proposed in the Flint Hills (Leddy *et al.*, 1999).

Main species: Bobolink, Savannah Sparrow, Sedge Wren.



Evidence for Concern

Bird Kills

Existing Studies:

- Generally collision-related deaths not a threat, but

Anomaly:

Altamont Pass, California

- 22,000 birds killed over 20 years
- Golden eagles, hawks, and owls

Poor Planning and Siting!



Evidence for Concern

Bat Kills

Existing Studies:

- Generally collision-related deaths not a threat, but

Anomaly:

Buffalo Ridge, Minnesota

- 184 bat collision fatalities over 4 years
(Johnson *et al.*, 2003)



Predation

Raptors use:

- Poles
- Transmission lines
- Fences



Wildlife

Planning and Management Issues

- Avoidance

Siting: Key habitats

Migration corridors

Staging areas

Landscape selection

- Intact healthy native vs. cultivated, altered
- Land management practices



Wildlife

Planning and Management Issues

- Avoidance

Design: No perches

- Towers

- Nacelles

Buried power lines

Minimal roads and fences

Turbine density and spacing



Wildlife Planning and Management Issues

- Avoidance

Operation and Maintenance:

Minimize disturbance

- Vegetation
- Soils
- Wildlife
- Scheduling



Wildlife

Planning and Management Issues

- Mitigation

- Off-site habitat restoration

- Management modifications

- Key habitats
 - Affected species
 - Adjacent lands



Additional Information

Kansas Renewable Energy Working Group

www.krewg.org

Wildlife Management Institute

www.wildlifemanagementinstitute.org

